

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1 - 3. (CANCELLED)

Claim 4. (CURRENTLY AMENDED) ~~The system of claim 2,~~ A system having a processor for managing central processing unit (CPU) resources in a computing device, the system comprising:

a control component configured to analyze information associated with CPU resource allocation to determine whether a process is delinquent for utilizing a percentage of CPU resources above a predetermined threshold percentage;

a throttling component configured to suspend a delinquent process for a variable amount of time before resuming the process to reduce the percentage of CPU resources occupied by the delinquent process; and

a monitoring component configured to monitor the delinquent process to provide real-time feedback information regarding CPU resource usage by the delinquent process;

wherein the throttling component is further configured to suspend and resume an object comprising the delinquent process wherein the object comprises at least one other process, a process group, and a process tree; and

wherein the throttling component increases duration of the suspension period of the delinquent process if the delinquent process continues to occupy CPU resources above the predetermined threshold percentage after suspension and resumption of the delinquent process.

Claim 5. (AMENDED) ~~The system of claim 2;~~ A system having a processor for managing central processing unit (CPU) resources in a computing device, the system comprising:

a control component configured to analyze information associated with CPU resource allocation to determine whether a process is delinquent for utilizing a percentage of CPU resources above a predetermined threshold percentage;

a throttling component configured to suspend a delinquent process for a variable amount of time before resuming the process to reduce the percentage of CPU resources occupied by the delinquent process; and

a monitoring component configured to monitor the delinquent process to provide real-time feedback information regarding CPU resource usage by the delinquent process;

wherein the throttling component is further configured to suspend and resume an object comprising the delinquent process wherein the object comprises at least one other process, a process group, and a process tree; and

wherein the throttling component decreases duration of the suspension period of the delinquent process if the process occupies CPU resources below the predetermined threshold percentage for an sufficient number of monitoring intervals.

Claims 6 - 8 (CANCELLED)

Claim 9 (AMENDED) ~~The method of claim 8,~~ A computerized method for throttling a delinquent process that occupies more than a predetermined threshold percentage of central processing unit (CPU) resources, the method comprising:

determining whether a process is delinquent for occupying more than a predetermined threshold percentage of CPU resources;

monitoring the process determined to be delinquent for a fixed time period;

suspending the delinquent process for a variable time period to initiate throttling of the delinquent process;

resuming the delinquent process to complete throttling of the delinquent process;

throttling an object if the object comprises the delinquent process;

determining whether the delinquent process is still delinquent after throttling by comparing CPU resource usage after throttling to the predetermined threshold percentage; and

~~further comprising~~ adjusting the duration of the suspension period of the delinquent process if the delinquent process is still delinquent.

Claim 10 (PREVIOUSLY PRESENTED) The method of claim 9, wherein the magnitude of the adjustment to the suspension period is predetermined.

Claim 11 (PREVIOUSLY PRESENTED) The method of claim 9, wherein the duration of the suspension of the delinquent process is increased if the delinquent process is still delinquent.

Claim 12 (AMENDED) ~~The method of claim 8, further comprising~~ A computerized method for throttling a delinquent process that occupies more than a predetermined threshold percentage of central processing unit (CPU) resources, the method comprising:

determining whether a process is delinquent for occupying more than a predetermined threshold percentage of CPU resources;

monitoring the process determined to be delinquent for a fixed time period;

suspending the delinquent process for a variable time period to initiate throttling of the delinquent process;

resuming the delinquent process to complete throttling of the delinquent process;

throttling an object if the object comprises the delinquent process;

determining whether the delinquent process is still delinquent after throttling by comparing CPU resource usage after throttling to the predetermined threshold percentage; and

determining whether the once delinquent process remains below the threshold CPU resource usage percentage for a predetermined time period if the once delinquent process is not delinquent after throttling.

Claim 13 (PREVIOUSLY PRESENTED) The method of claim 12, further comprising ceasing monitoring of the once delinquent process if it is determined that the once delinquent process is not delinquent for a sufficient time period after throttling.

Claim 14 (PREVIOUSLY PRESENTED) The method of claim 9, wherein the duration of suspension of the delinquent process is decreased if it is determined the process is not delinquent after throttling for an sufficient period of time.

Serial No. 10/824,303
Amendment Filed February 18, 2010
Reply to Office Action Dated August 18, 2009

Claims 15 – 28 (CANCELLED)

Claim 29 (AMENDED) ~~The method of claim 28, further comprising~~ A computerized method for managing process utilization of central processing unit (CPU) resources comprising:

determining whether a process is delinquent for occupying more than a predetermined percentage of CPU resources;

monitoring the process determined to be delinquent;

determining whether an exemption from CPU throttling exists for the delinquent process; and

terminating monitoring of the delinquent process if the delinquent process is exempt from CPU throttling;

wherein the method is performed on an object if the object comprises at least one delinquent process, where the object further comprises at least one other process, a process group, and a process tree; and further comprising

running the delinquent process for a fixed time period;

suspending the delinquent process for a variable time;

resuming the process after the suspension period;

determining whether the delinquent process is still delinquent after throttling by comparing the percentage of CPU resources occupied by the delinquent process after throttling to the predetermined threshold percentage;

adjusting the duration of the suspension period if the delinquent process is still delinquent after throttling; and

increasing the duration of the suspension period if the delinquent process is determined to be consuming a greater percentage of CPU resources than the predetermined threshold percentage.

Claim 30 (ORIGINAL) The method of claim 29, further comprising increasing the duration of the suspension period by predetermined increments.

Claim 31 (ORIGINAL) The method of claim 29, further comprising making inferences regarding a most effective increment of increase to the suspension period duration.

Claim 32 (PREVIOUSLY PRESENTED) The method of claim 31, wherein the inferences are based at least in part on a comparison of the percentage of CPU resources occupied by the process before and after throttling.

Claim 33 (CURRENTLY AMENDED) ~~The method of claim 28, further comprising~~ A computerized method for managing process utilization of central processing unit (CPU) resources comprising:

determining whether a process is delinquent for occupying more than a predetermined percentage of CPU resources;

monitoring the process determined to be delinquent;

determining whether an exemption from CPU throttling exists for the delinquent process; and

terminating monitoring of the delinquent process if the delinquent process is exempt from CPU throttling;

wherein the method is performed on an object if the object comprises at least one delinquent process, where the object further comprises at least one other process, a process group, and a process tree;

running the delinquent process for a fixed time period;

suspending the delinquent process for a variable time;

resuming the process after the suspension period;

determining whether the delinquent process is still delinquent after throttling by comparing the percentage of CPU resources occupied by the delinquent process after throttling to the predetermined threshold percentage;

adjusting the duration of the suspension period if the delinquent process is still delinquent after throttling; and

decreasing the duration of the suspension period if the once delinquent process is determined to be consuming a lesser percentage of CPU resources than the threshold percentage for fewer than a predetermined number of monitoring intervals.

Claim 34 (ORIGINAL) The method of claim 33, the suspension period duration is decreased by predetermined increments.

Claim 35 (ORIGINAL) The method of claim 34, further comprising making inferences regarding a most effective increment of decrease to the suspension period duration.

Claim 36. (PREVIOUSLY PRESENTED) The method of claim 35, the inferences are based at least in part on a comparison of the number of intervals for which the process consumed CPU resources is at a percentage below the predetermined threshold percentage and the predetermined threshold number of intervals.

Claim 37 (CANCELLED)

Claim 38. (AMENDED) ~~The method of claim 23,~~ A computerized method for managing process utilization of central processing unit (CPU) resources comprising:

determining whether a process is delinquent for occupying more than a predetermined percentage of CPU resources;

monitoring the process determined to be delinquent;

determining whether an exemption from CPU throttling exists for the delinquent process; and

terminating monitoring of the delinquent process if the delinquent process is exempt from CPU throttling;

wherein the method is performed on an object if the object comprises at least one delinquent process, where the object further comprises at least one other process, a process group, and a process tree; and

wherein the exemption of the delinquent process from CPU throttling is based at least in part on at least one of an exemption of the delinquent process itself, an exemption of a user utilizing the delinquent process, and an exemption of the object comprising the delinquent process, if the delinquent process is comprised by the object.

Claims 39 – 43 (CANCELLED)